

**FCC Amendment of Sections 15.35 and 15.253 of the Commission's Rules Regarding Operation of Radar Systems in the 76-77 GHz Band and Amendment of Section 15.253 of the Commission's Rules to Permit Fixed Use of Radar in the 76-77 GHz Band**

**Re: Commentary to PETITION FOR PARTIAL RECONSIDERATION OF FCC-12-72A1**

**Reference: ET Docket No. 11-90, RM-11555, ET Docket No. 10-28**

Delphi Automotive ("Delphi") respectfully submits its comments regarding the Federal Communications Commission's ("FCC") Notice of Proposed Rulemaking ("NPRM") in the above-captioned proceeding and recently received petitions. Delphi is a leader and innovator in the design and manufacture of vehicular radar systems and has actively and consistently participated in the several FCC's rulemakings affecting such devices in recent years. Delphi has obtained a number of FCC authorizations for sale of non-licensed Part 15 automotive radar products at 10 GHz, 17 GHz, 24 GHz and 76 GHz.

Delphi opposes Navtech's request for unlimited unlicensed use of fixed 76-77 GHz radar along roadways. Delphi stated its position and concern for interference in its comments during the initial comment phase of the NPRM that were filed on July 14, 2011. Delphi believes that the possibility of interference from multiple fixed radar installations in certain scenarios could increase the probability of interference when compared to a multiple vehicle scenario. If multiple fixed radars are mounted on elevated platforms along a highway and pointed toward a highway, their beam is not blocked by adjacent vehicles and the radar equipped vehicle may be in a potential interference environment for an extended period of time and potentially from multiple fixed radars simultaneously. In contrast, in a situation with multiple radar equipped vehicles, the radar line of sight to most vehicles is naturally obstructed thereby limiting the number of potential interferers.

Delphi and the other radar manufacturers recognize the fact that automotive radars can interfere with one another. This fact is evidenced by the creation of the MOSARIM (More Safety for All by Radar Interference Mitigation)<sup>1</sup> project in Europe. The project's goals include investigating the interference mechanisms, quantifying the interference levels and developing countermeasures to mitigate automotive radar mutual interference. Delphi is very concerned that a rules change allowing the potential for many additional fixed roadside 76 GHz radiators would increase the probability of interference to automotive radar. There are

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<sup>1</sup> <https://assrv1.haw-aw.de/>

<sup>2</sup> <https://assrv1.haw-aw.de/index.php/news/34-mosarimnews/108-measurement-campaign-in-sindelfingen>

potential fixed radar applications that have been discussed such as monitoring tunnels and bridges and traffic control which would aim the antenna main beam directly at the roadway as the primary mode of operation. These types of fixed radar systems would pose the greatest threat of potential interference to automotive radar.

The MOSARIM group recently completed interference testing with the Navtech TMS radar as a fixed interferer and four automotive radar sensors installed on test vehicles as the victim radars<sup>2</sup>. The results indicate the interference from the Navtech TMS radar was visible significantly above the noise floor of the automotive radars and generated disturbances in the radiolocation of other objects on the road. Further, interference from the Navtech TMS radar at times completely blinded all four of the automotive radars. The MOSARIM group concluded that fixed roadside radar systems are a significant interference threat to automotive radar.

There are other applications discussed by Navtech that would appear to have minimal impact on automotive radar. Delphi believes that some of these applications could be included in future rules changes that cover the specific application as was done with the airport FOD authorization. Delphi would support any potential application that can be shown to minimize potential interference with automotive radar. An example would be Honeywell's request to consider aircraft mounted radar to be used solely for collision avoidance while the aircraft is taxiing on the runway.

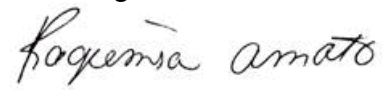
Delphi believes that more time is required to determine the potential for interference from fixed radar operating in the 76-77 GHz band. The commission's rules have not allowed fixed radar, and many possible applications exist that have not been analyzed with regard to interference potential to automotive radar. Delphi believes that airport surveillance will not impact automotive radar applications. The decision to open the fixed radar operation to all unspecified applications is a new concern and needs additional time for review.

Delphi believes that limiting the fixed radar to airport operation as originally requested by ERA will allow additional time for evaluation of interference from new and different applications. Delphi believes that new applications should petition the Commission as ERA did in order to define the system operation and allow time to determine the interference potential of the specific application. Following this recommendation will minimize the potential interference impact on automotive radar and help protect the safety aspects of automotive radar systems.

Delphi strongly opposes a universal ruling allowing the use of fixed 76 GHz radar for all potential applications. Each application should be considered on its own merits.

If you have any questions regarding this submission, please contact me at 248-813-2085.

Best regards,

A handwritten signature in cursive script that reads "Ragemra Amato".

Ragemra Amato,  
Director Government/Technical Affairs  
Delphi